Acute CPAP delivery outside of PICU/paeds HDU

A decision support tool

- **Acute** Prolonged continuous delivery of Continuous Positive Airway Pressure ventilation outside of a PICU or paeds HDU environment is not recommended as per the Irish Model of Care for Paediatric Critical Care 2019. Requirement for acute CPAP should prompt a referral to PICU via **1800222378**
- Commencement and stabilization on CPAP whilst awaiting transfer or retrieval to a tertiary center may provide vital support and has the potential to reduce the risk of intubation if successful.
- The decision to commence CPAP will lie with the medically responsible physician in the referring centre in consultation with the local anaesthesiology team and with support from the accepting PICU/IPATS consultant

Common indications

- Bronchiolitis with no improvement OR disimprovement on High flow nasal cannula (HFNC) at 2L/Kg/min
- Bronchiolitis with moderate-severe work of breathing not suitable for HFNC i.e., Type 2 respiratory failure
- Severe acute asthma failed/unsuitable for HFNC
- Children with neuromuscular disease & acute respiratory failure with preserved respiratory drive

Contraindications

- Imminent respiratory failure or cardiovascular instability
- Central apnoea (typically infants with bronchiolitis)
- Reduced level of consciousness/inability to protect airway
- Air Leak i.e., pneumothorax
- Facial or choanal abnormalities/trauma
- Severe agitation and expected intolerance

If a child requires escalation to CPAP, please contact PICU on **1800 222 378 (**For advice/transfer)

AND

On-site on-call Anaesthesiology team

Recommended considerations before starting CPAP

- Chest X Ray to rule out air leak
- Recent capillary/venous blood gas for baseline pC02 – (if patient too unstable for blood gas to be taken, likely too unstable for CPAP)
- Placement of a naso/orogastric tube **on free drainage** (if not in use)
- Consideration of **enteral** sedation (local consultant decision only). **Not recommended if child is exhausted or hemodynamically unstable.**
  Options include
  - Continuous low volume feed/EBM
  - Clonidine 0.5-1mcg/kg q4-6hrs
  - Chloral hydrate 10-15mg/kg q 4-6hrs
- Children require continuous ECG/Sats monitoring & a nurse ratio of at least 1:2 (ideally 1:1)
- Suction & BVM should be readily available

Suggested CPAP Equipment & Settings

- Hamilton T1 ventilator + adult coaxial circuit + expiratory valve + correct size Respireo nasal Mask (or local CPAP set up)

Step by step guide **Step by step video**

- Mode: Select adult/ped & weight then -> NIV
- Ensure all pre-op checks are completed before commencement
- Dial pSupport down to 0cmH20 and select desired PEEP (CPAP). Typically start 3/4cmH20 for tolerance and quickly work up to setting of 6-8cmH20 over 5-10min
- Adjust Fi02 to maintain saturations between 92-95%

- An improvement in work of breathing, HR, RR and Fi02 requirements is expected within 1-2hours
- In general, the clinical change in a child is often more useful to assess the response to CPAP than repeated blood gas measurement
- If no improvement or there is deterioration, referral to anaesthesiology for intubation is recommended + update PICU/IPATS team
- In bronchiolitis -no proven role for nebulised bronchodilators, MgS04 or steroids. In general, a hands-off approach is recommended